SFA Modernization Partner

United States Department of Education Student Financial Assistance

Integrated Technical Architecture

Organizational Roles & Responsibilities

Task Order # 16

Deliverable # 16.1.4

July, 2000

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Introduction

This document describes the organizational capabilities required to support SFA's Integrated Technical Architecture environment. Specifically, the document:

- Confirms the major components of an enterprise IT architecture

- Outlines the major functions that will need to be performed in providing on-going support and maintenance of the Integrated Technical Architecture

- Provides a framework to map key roles and accountabilities for performing these functions to appropriate organizational entities within SFA, particularly within the Enterprise IT Management Group of SFA CIO

- Highlight major considerations and next steps for establishing the IT architecture management capabilities within SFA

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The following diagram outlines the approach followed for the Integrated Technical Architecture Organizational Roles and Responsibilities
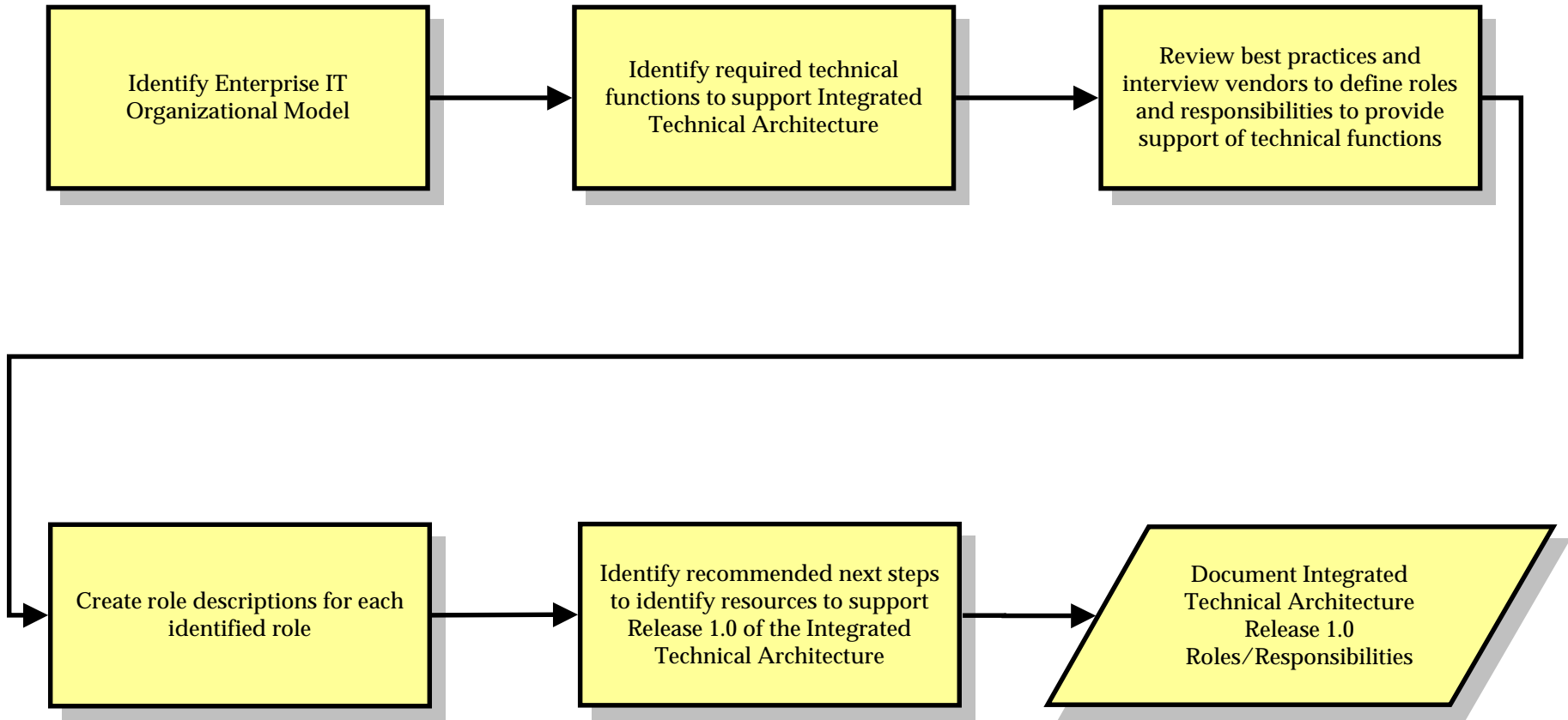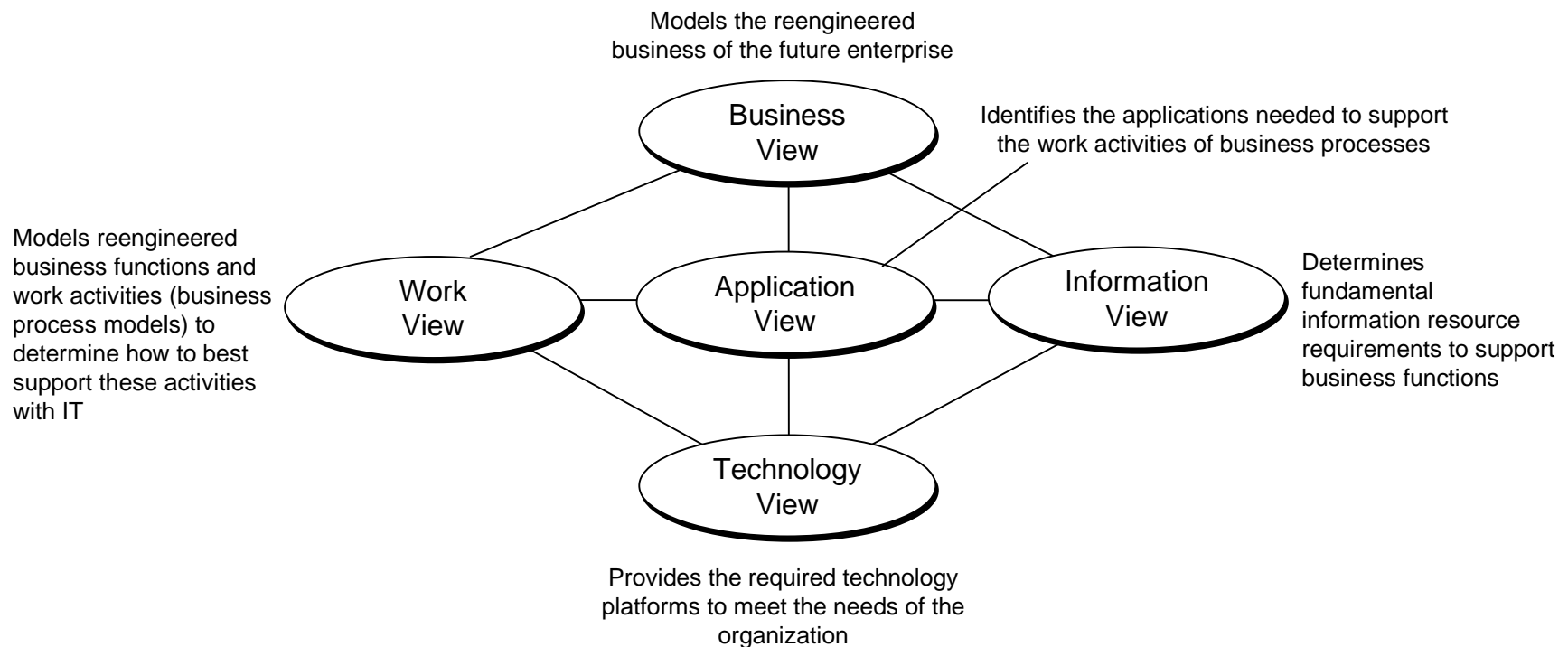
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┌──────────────────────┐     ┌──────────────────────┐     ┌──────────────────────┐
│ Identify Enterprise IT│ ──> │ Identify required    │ ──> │ Review best practices│
│ Organizational Model  │     │ technical functions  │     │ and interview vendors│
│                       │     │ to support Integrated│     │ to define roles and  │
│                       │     │ Technical Architecture│    │ responsibilities to  │
│                       │     │                      │     │ provide support of   │
│                       │     │                      │     │ technical functions  │
└──────────────────────┘     └──────────────────────┘     └──────────────────────┘
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┌──────────────────────┐     ┌──────────────────────┐     ╱────────────────────────╱
│ Create role          │ ──> │ Identify recommended │ ──> ╱ Document Integrated     ╱
│ descriptions for each │     │ next steps to identify│    ╱ Technical Architecture  ╱
│ identified role       │     │ resources to support  │    ╱ Release 1.0             ╱
│                       │     │ Release 1.0 of the    │    ╱ Roles/Responsibilities  ╱
│                       │     │ Integrated Technical  │    ╱                         ╱
│                       │     │ Architecture          │    ╱────────────────────────╱
└──────────────────────┘     └──────────────────────┘
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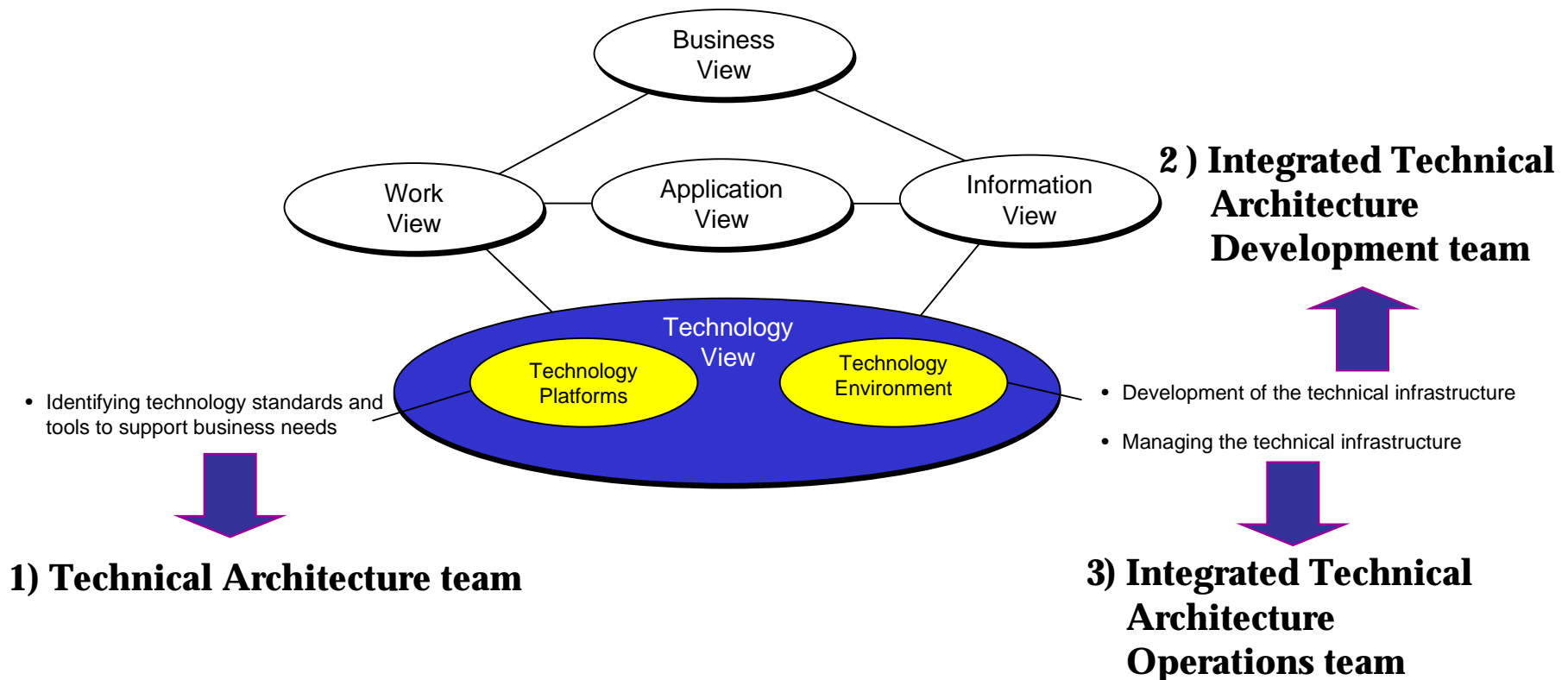- Mapping Roles into the Existing SFA Organization

An enterprise IT architecture comprises five interrelated architecture components, each representing a different view or perspective of the way IT will provide the desired business results.

Models the reengineered business of the future enterprise

Business View

Identifies the applications needed to support the work activities of business processes

Models reengineered business functions and work activities (business process models) to determine how to best support these activities with IT

Work View

Application View

Information View

Determines fundamental information resource requirements to support business functions

Technology View

Provides the required technology platforms to meet the needs of the organization

Key focus for an IT Architecture Organizational Model

To support the Integrated Architecture vision, SFA needs to have the organizational capabilities necessary to perform and sustain on-going architecture design, development, and management.
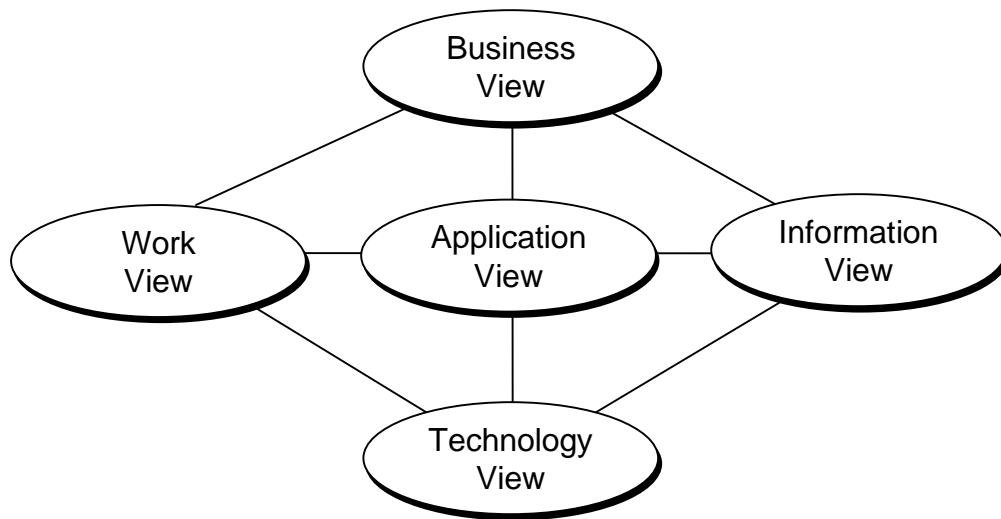
Key Issues to address organizationally:

What needs to be done?

Who will perform it?

and

How will it be accomplished?

Establishing an integrated technical architecture to meet SFA's business needs requires an integrated set of technical functions to be performed. At the highest level, these include:
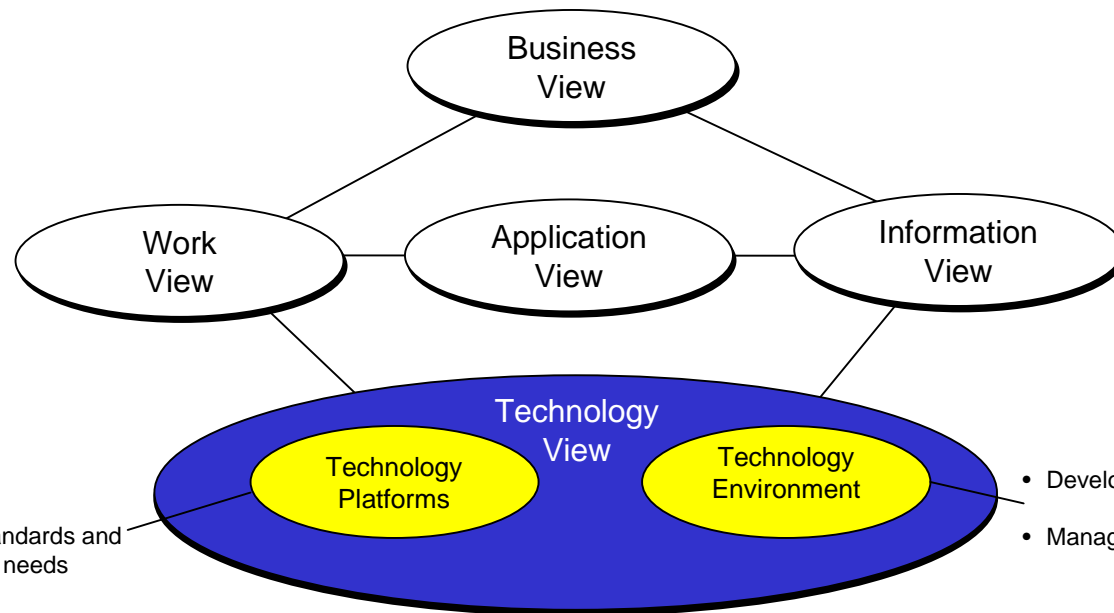
- Identifying technology standards and tools to support business needs
- Development of the technical infrastructure
- Managing the technical infrastructure

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- **Integrated Technical Architecture Roles/Responsibilities**

- Mapping Roles into the Existing SFA Organization

Based upon the technical requirements for the development and support of the Integrated Technical Architecture, three teams were identified. Roles for each team were then developed.

Business
View

2) Integrated Technical Architecture Development team

Work
View

Application
View

Information
View

Technology
View

Technology
Platforms

Technology
Environment

• Identifying technology standards and tools to support business needs

• Development of the technical infrastructure

• Managing the technical infrastructure

1) Technical Architecture team

3) Integrated Technical Architecture Operations team

Technical Architecture Team Roles

The following roles are required within the Technical Architecture Team:

Architecture Domain:

Technical Architecture

Specific Functional Roles:

- "Lead Technical Architect"
- "Technical Architect"
- "Data Architect"
- "Application Architect"
- "Security Architect"

Note: These roles are intended to be used as a functional guide. Certain Individuals may perform several roles, or multiple individuals may perform a single role, depending on resource availability and technical skills.

Lead Technical Architect

The Lead Technical Architect role is responsible for the overall technical architecture, strategy, and standards. Works with business leaders, as well as the development and support teams to ensure the consistent deployment of standards and methodologies across the Integrated Technical Architecture.

Major Responsibilities
- Define systems and technical architecture at the enterprise level
- Manage technical integration
- Coordinate integration with Service Delivery teams
- Define and roll-out technical infrastructure
- Enforce Integrated Technical Architecture standards

Competencies Required
Technical Competencies
- In-depth knowledge of multiple platforms, technical architectures and topology skills
- Experience using structured methodologies and tools

Functional Competencies
- Ability to translate business requirements into technology requirements/enablers
- Strong business acumen and understanding of SFA's business functions
- Ability to define system integration requirements and issues

Technical Architect

The Technical Architecture role is responsible for defining and implementing the Integrated Technical Architecture environment.

Major Responsibilities
- Develop systems and technical architecture strategy and provide support
- Manage hardware and software service providers
- Determine and roll-out overall security and systems controls policies and procedures
- Evaluate and implement new software and hardware products
- Develop capacity planning strategy and provide support
- Develop monitoring strategy and requirements
- Maintain configuration documentation

Competencies Required
Technical Competencies
- In-depth knowledge of multiple platforms, technical architectures and topology skills
- Experience using structured methodologies and tools

Functional Competencies
- Understanding of SFA's business processes and customers
- Understanding of how the systems and technical environments support the business
- Understanding of system integration requirements and issues

Data Architect

The Data Architecture role provides advanced data modeling, database design, and database support.

Major Responsibilities
- Participate in design and maintenance of Enterprise data model
- Design and implement new database structures
- Integrates package application software database structures
- Consult Application Development on database design
- Evaluate, implement and test new products
- Participate in design and implementation of database security and recovery processes
- Maintain database procedures and documentation
- Provide capacity planning support

Competencies Required
Technical Competencies
- Ability to navigate, manipulate data and develop databases supported by various operating systems
- Strong skills in Oracle and UNIX (HP-UX/Sun Solaris)
- Basic knowledge of other RDBMs (DB2, Sybase, etc.)
- Working knowledge of distributed architectures

Functional Competencies
- Understanding of how database supports specific SFA business functions

Application Architect

The Application Architect role is responsible for defining the SFA Application environment, and identifying application and data interface requirements.

Major Responsibilities
- Develop application architecture strategy and provide support
- Develop application interface strategy and standards
- Participate in capacity planning
- Evaluate and implement new software products
- Maintain configuration documentation
- Maintains application release plans

Competencies Required
Technical Competencies
- In-depth knowledge of multiple platforms, technical architectures and topology skills
- Experience using structured methodologies and tools

Functional Competencies
- Understanding of SFA's business processes and customers
- Understanding of how the systems and technical environments support the business
- Understanding of available packaged software

Security Architect

The Security Architect role is responsible for defining and implementing the SFA Security environment.

Major Responsibilities
- Develop security architecture strategy and provide support
- Develop security standards
- Evaluate and implement new security products
- Maintain security configuration documentation

Competencies Required
Technical Competencies
- In-depth knowledge of multiple platforms, technical architectures and topology skills
- Experience using structured methodologies and tools

Functional Competencies
- Understanding of SFA's business processes and customers
- Understanding of how the systems and technical environments support the business
- Understanding of available security packaged software

Integrated Technical Architecture Development Roles

The following roles will be required to develop the SFA Integrated Technical Architecture.

Architecture Domain:	Tools:	Specific Functional Roles:
Technical Architecture		• "Development Architect"
Integration (EAI)	***IBM MQSeries Integrator***	• "EAI Business Administrator" • "EAI Application Developer"
Decision Support (Data Warehouse)	***Informatica*** ***Microstrategy***	• "Data Modeler" • "Functional Analyst"

Note: These roles are intended to be used as a functional guide. Certain Individuals may perform several roles, or multiple individuals may perform a single role, depending on resource availability and technical skills.

Development Architect

The Development Architect role is responsible for defining and implementing SFA's Development Environment for the Integrated Technical Architecture. Identifies development strategy and ensures that standards are being met.

Major Responsibilities
- Define development architecture strategy
- Perform design, programming, testing, system documentation, acceptance and quality control tasks for technical infrastructure applications
- Perform systems analysis and design
- Perform systems installation
- Contribute to packaged systems selection and design
- Create application documentation
- Provide production application support

Competencies Required
Technical Competencies
- In-depth knowledge of multiple platforms, technical architectures and topology skills
- Ability to maintain and enhance technical infrastructure applications
- Knowledge of development tools (compilers, development toolkits, product-specific tools)

Functional Competencies
- Structured system design/development skills and experience
- Understanding of SFA's business processes and customers
- Understanding of how applications support the Integrated Technical Architecture

EAI Business Administrator

The EAI Business Administrator role is responsible for managing business rules within SFA's integration architecture.

Major Responsibilities
- Interact with user groups and development team to gather and document business requirements
- Develop and maintain business rules within the EAI (MQ Series Integrator) environment
- Identification and maintenance of message flows and source/target data formats

Competencies Required

Technical Competencies
- In-depth knowledge of EAI development tools
- Experience implementing and maintaining business rules

Functional Competencies
- Understanding of SFA's business processes
- Ability to liaison with users and technical architecture team to ensure business rules are accurate and implementable

EAI Application Developer

The EAI Application Developer role is responsible for creating message queues and for development of interfaces (adapters) within the Integration Architecture.

Major Responsibilities
- Perform systems analysis and design for EAI development environment
- Perform installation of EAI development components
- Create installation/configuration documentation
- Provide production application support

Competencies Required
Technical Competencies
- In-depth knowledge of EAI development tools
- Experience implementing and maintaining business rules
- Knowledge of development tools (compilers, development toolkits, product-specific tools)

Functional Competencies
- Structured system design/development skills and experience
- Understanding of SFA's business processes
- Understanding of how the systems and technical environments support the business

Data Modeler

The Data Modeler role is responsible for development of the logical data models. Translates business requirements into entity relationship diagrams (ERDs), which are used to design the physical database.

Major Responsibilities
- Participate in design and maintenance of logical data model
- Design and implement new ERDs and database structures
- Consult Application Development on database design

Competencies Required
Technical Competencies
- In-depth knowledge of multiple platforms, technical architectures and topology skills
- Experience using structured methodologies and tools
- Experience using data modeling tools

Functional Competencies
- Understanding of SFA's business and customers
- Understanding of how the systems and technical environments support the business
- Understanding of distributed production support

Functional Analyst

The Functional Analyst role is responsible for taking business requirements and developing decision support capabilities to meet those requirements

Major Responsibilities
- Interact with user groups and development team to gather and document business requirements
- Develop and maintain business rules within the decision support (Microstrategy) environment

Competencies Required

Technical Competencies
- In-depth knowledge of decision support development tools
- Experience implementing and maintaining decision support business rules/reports

Functional Competencies
- Understanding of SFA's business processes
- Ability to liaison with users and technical architecture team to ensure business rules are accurate and implementable

The following technical operational roles will be needed to administer the products and tools that make up the SFA Integrated Technical Architecture.

Architecture Domain:	Tools:	Specific Functional Roles:
Technical Architecture		• "Operations Architect"
Internet	*IBM WebSphere*	• "Web Server Administrator" • "Web Server Performance Specialist" • "Database Administrator"
	Interwoven	• "Content Management Administrator"
	Viador	• "Portal Administrator"
	Autonomy	• "Search Engine System Administrator"
Integration (EAI)	*IBM MQSeries Integrator*	• "EAI System Administrator"
Decision Support (Data Warehouse)	*Informatica*	• "Data Warehouse Administrator" • "Database Administrator"
	MicroStrategy	• "Decision Support System Administrator"

Note: These roles are intended to be used as a functional guide. Certain Individuals may perform several roles, or multiple individuals may perform a single role, depending on resource availability and technical skills.

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Operations Architect

The Operations Architect role is responsible for defining and implementing SFA's Systems and Technical operations environment. Develops operations support strategy and ensures that standards are being met.

Major Responsibilities
- Develop operations architecture strategy and provide support
- Manage hardware and software service providers
- Perform hardware capacity planning
- Evaluate and implement new software and hardware operations products
- Develop capacity planning strategy and provide support
- Develop and maintain disaster recovery plans and procedures
- Develop operations efficiency tools

Competencies Required
Technical Competencies
- In-depth knowledge of multiple platforms, technical architectures and topology skills
- Experience using structured methodologies and tools
- Knowledge of one or more operations monitoring tools (i.e., Tivoli, OpenView)

Functional Competencies
- Understanding of SFA's business and customers
- Understanding of how the systems and technical environments support the business
- Understanding of distributed production support

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Web Server Administrator

The Web Server Administrator role is responsible for supporting the Web Server Environment. Identifies web server configurations to support business applications.

Major Responsibilities
- Web Server (IBM WebSphere) configuration and support
- Apply fixes and upgrades to web server software
- Maintain installation/configuration plans and procedures
- Monitor and maintain web server environment
- Develop and maintain disaster recovery plans and procedures
- Participate in hardware capacity planning

Competencies Required
Technical Competencies
- In-depth knowledge of internet architectures and tools
- Knowledge of how web servers interface with other components in the integrated technical architecture
- Knowledge of web server monitoring tools

Functional Competencies
- Understanding of SFA's service level agreements
- Understanding of distributed production support

Web Server Performance Specialist

The Web Server Performance Specialist role is responsible for evaluating and optimizing the web server environment. Assists Web Server Administrator in deploying business applications.

Major Responsibilities
- Web Server (IBM WebSphere) configuration and support
- Identification and analysis of key performance indicators
- Managing and coordinating performance tests
- Assist Web Server Administrator in monitoring and maintaining web server environment
- Participate in hardware capacity planning

Competencies Required
Technical Competencies
- In-depth knowledge of internet architectures and tools
- Knowledge of how web servers interface with other components in the integrated technical architecture
- Knowledge of web server optimization tools and techniques

Functional Competencies
- Understanding of SFA's service level agreements
- Understanding of distributed production support

Content Management Administrator

The Content Management Administrator role is responsible for governing SFA's content management branches. Provides maintenance and configuration associated with content management branches.

Major Responsibilities
- Content Management (Interwoven) configuration and support
- Apply fixes and upgrades to content management software
- Maintain installation/configuration plans and procedures
- Monitor and maintain content management environment
- Develop and maintain disaster recovery plans and procedures
- Participate in hardware capacity planning

Competencies Required
Technical Competencies
- In-depth knowledge of internet architectures and tools
- Knowledge of how content management software interfaces with other components of the integrated technical architecture
- Knowledge of content management monitoring tools

Functional Competencies
- Understanding of SFA's service level agreements
- Understanding of distributed production support

Portal Administrator

The Portal Administrator role is responsible for maintaining SFA's portal environment.

Major Responsibilities
- Portal (Viador) configuration and support
- Apply fixes and upgrades to portal software
- Maintain installation/configuration plans and procedures
- Monitor and maintain portal environment
- Develop and maintain disaster recovery plans and procedures
- Participate in hardware capacity planning

Competencies Required
Technical Competencies
- In-depth knowledge of internet architectures and tools
- Knowledge of how portals interface with other components of the integrated technical architecture
- Knowledge of portal monitoring tools

Functional Competencies
- Understanding of SFA's service level agreements
- Understanding of distributed production support

Search Engine System Administrator

The Search Engine System Administrator role is responsible for supporting the spidering and indexing of the search engine environment.

Major Responsibilities
- Search Engine (Autonomy) configuration and support
- Apply fixes and upgrades to search engine software
- Maintain installation/configuration plans and procedures
- Monitor and maintain search engine environment
- Develop and maintain disaster recovery plans and procedures
- Participate in hardware capacity planning

Competencies Required
Technical Competencies
- In-depth knowledge of internet architectures and tools
- Knowledge of how the search engine interfaces with other components of the integrated technical architecture
- Knowledge of search engine monitoring tools

Functional Competencies
- Understanding of SFA's service level agreements
- Understanding of distributed production support

EAI Systems Administrator

The EAI Systems Administrator role is responsible for maintaining the EAI hardware and software components of the Integrated Technical Architecture

Major Responsibilities
- Manage EAI infrastructure (MQ Series queues, MQ Series Integrator, MQ Series Workflow)
- Implement software and hardware upgrades
- Maintain installation/configuration plans and procedures
- Monitor and maintain EAI environment
- Participate in defining capacity planning strategy and provide support
- Develop and maintain disaster recovery plans and procedures
- Develop operations efficiency tools

Competencies Required

Technical Competencies
- In-depth knowledge of EAI technical architectures and tools
- Knowledge of how EAI tools interface with other components of the integrated technical architecture
- Knowledge of EAI monitoring tools

Functional Competencies
- Understanding of SFA's service level agreements
- Understanding of distributed production support

Data Warehouse Administrator

The Data Warehouse Administrator role is responsible for operational considerations of the data warehouse, including security, job scheduling and submissions, and resolution of production failures.

Major Responsibilities
- Extract-Transform-Load (ETL) tool (Informatica) configuration and support
- Apply fixes and upgrades to ETL software
- Maintain installation/configuration plans and procedures
- Monitor and maintain ETL environment
- Develop and maintain disaster recovery plans and procedures
- Participate in hardware capacity planning
- Liaison with DBAs and Decision Support System Administrator

Competencies Required
Technical Competencies
- In-depth knowledge of data warehouse architectures and tools
- Knowledge of how ETL tools interface with other components of the integrated technical architecture
- Knowledge of web server monitoring tools

Functional Competencies
- Understanding of SFA's service level agreements
- Understanding of distributed production support

Decision Support System Administrator

The Decision Support System Administrator role is responsible for supporting SFA's Decision Support environment. Monitors usage, maintains stability and performance, and troubleshoots problems.

Major Responsibilities
- Decision Support (Microstrategy) configuration and support
- Apply fixes and upgrades to decision support software
- Maintain installation/configuration plans and procedures
- Monitor and maintain decision support environment
- Analyze and improve decision support environment performance
- Participate in hardware capacity planning
- Liaison with DBAs and Data Warehouse Administrator

Competencies Required

Technical Competencies
- In-depth knowledge of decision support architectures and tools
- Knowledge of how decision support tools interface with other components in the integrated technical architecture
- Knowledge of decision support monitoring tools

Functional Competencies
- Understanding of SFA's service level agreements
- Understanding of distributed production support

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Database Administrator

The Database Administrator (DBA) role provides database support to the Integrated Technical Architecture development and support teams.

Major Responsibilities
- Assist with design and implementation of new database structures
- Consult Data Architect and Application Architect on database design
- Maintain and develop database management toolsets
- Participate in design and implementation of database security and recovery processes
- Maintain database procedures and documentation
- Maintain database software/configuration
- Maintain database tables
- Provide capacity planning support
- Liaison with Data Warehouse and Decision Support System Administrator

Competencies Required
Technical Competencies
- Ability to navigate, manipulate data and develop databases supported by various operating systems
- Strong skills in Oracle, DB2, UNIX (HP-UX and Sun-Solaris), OS/390
- Working knowledge of distributed architectures

Functional Competencies
- Understanding of how database supports SFA business processes
- Detailed knowledge of logical and physical database designs for all SFA applications
- Detailed knowledge of the SFA data integration architecture

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- **Mapping Roles into the Existing SFA Organization**

The roles identified to support the Integrated Technical Architecture should reside within the existing Enterprise IT Management organization, or other areas within the CIO organization:

Integrated Technical Architecture Support Functions

- Technical Architecture team

- Integrated Technical Architecture Development team

- Integrated Technical Architecture Operations team

Map into

Enterprise IT Management Organization

Or
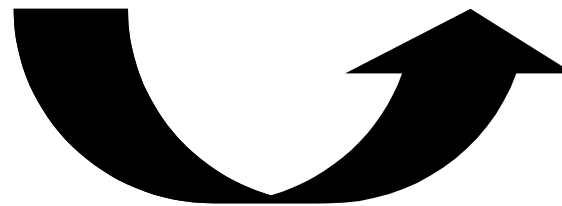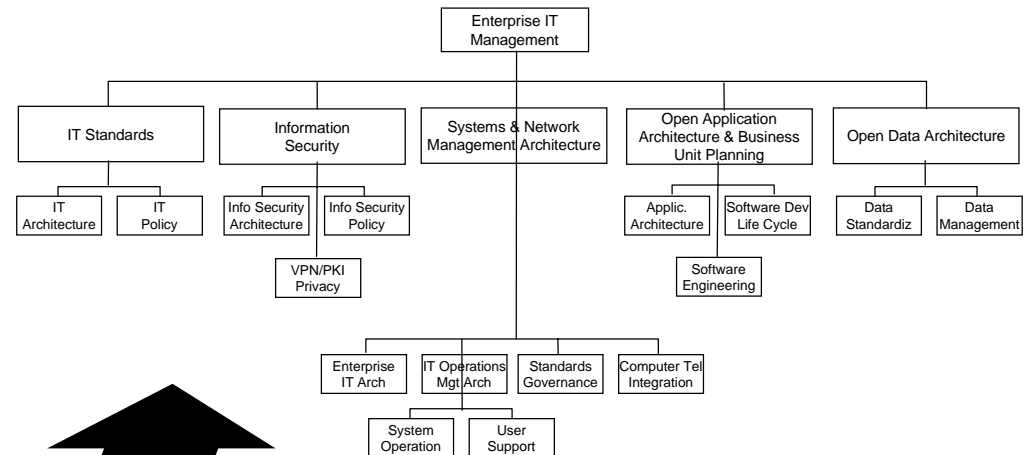
Other areas within CIO

To identify where the Integrated Technical Architecture Organizational Roles best fit within the CIO organization, the following are recommended next steps:

- Review critical functions required to support and maintain on-going architecture development and maintenance work.

- Assess existing skill sets within the CIO Organization to support the new tools within the integrated technical architecture.

- Confirm functional accountability for technical architecture and management activities (who's responsible for what within the CIO Organization).

- Where appropriate, determine where SFA needs to supplement its own staff and confirm role, responsibilities of potential new positions.

- Where appropriate, begin considerations for contracting out required roles and responsibilities.

- Where needed, develop required position descriptions (PDs) and initiate recruiting for internal positions.